AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF THE CLAIMS

1. (Currently Amended) A method of improving the efficacy of a metal halide lamp comprising:

disposing a multilayer coating on a surface of an arctube, the coating comprising layers of at least two materials of different refractive index, which in combination transmit visible radiation and reflect radiation in the UV region of the electromagnetic spectrum, the coating being optimized to reflect at least 95% of UV radiation striking the coating;

operating the lamp to cause UV and visible radiation emission from an arc;

and

reflecting the UV radiation back into the lamp.

2. (Original) The method of claim 1, wherein the coating is optimized to reflect at least 98% of UV radiation striking the coating.

3. (Currently Amended) The method of claim 1, wherein the lamp includes a metal halide pool and the arctube is formed of pure quartz or undoped quartz and is in a vertical orientation, ~~wherein the coating reflects UV radiation~~ such that at least 45% of the UV emitted by the arc in the wavelength range of 300-400 nm reaches ~~a~~ the metal halide pool.

4. (Currently Amended) The method of claim 1, further comprising determining a region of the lamp where the UV emission is greatest and wherein the coating is optimized by weighting a software program to design the coating so that it has its greatest reflectivity in the region of the UV spectrum where the UV emission from the lamp is greatest.

5. (Original) The method of claim 1, further including:

determining a spectral distribution of the lamp when uncoated; and

optimizing the coating to provide greater reflectivity in the region of the UV spectrum where the UV emission is greatest.

6. (Currently Amended) ~~The~~ A method of ~~claim 1, further including~~ improving the efficacy of a metal halide lamp comprising:

disposing a multilayer coating on a surface of an arctube, the coating comprising layers of at least two materials of different refractive index, which in combination reflect radiation in the UV region of the electromagnetic spectrum, the coating being optimized to reflect at least 95% of UV radiation striking the coating;

operating the lamp to cause UV emission from an arc;

reflecting the UV radiation back into the lamp; and

reflecting a portion of light in the visible region of the spectrum back into the lamp.

7. (Original) The method of claim 6, further including:

reflecting a portion of the visible light in a wavelength range of from 400-450 nanometers back into the lamp.

8. (Original) The method of claim 1, further including:

optimizing the multi-layer coating at an angle which is selected to take into account off-normal incidence of the radiation on the arctube during operation of the lamp.

9. (Currently Amended) The method of claim 8, further including:

determining a mean angle at which UV light strikes the arctube; and

with a computer program which optimizes the coating for a selected angle to the arctube wall, selecting the angle at which the coating is optimized to be within about 10° of the mean angle.

10. (Original) The method of claim 9, wherein the angle at which the coating is optimized is within about 5° of the mean angle.

11. (Currently Amended) A method for improving the efficiency of a metal halide lamp comprising:

determining a spectral power distribution for the lamp; and

disposing a multilayer coating on a surface of an arctube of the lamp which reflects radiation in the UV region of the electromagnetic spectrum, the coating being optimized by a computer program which selects an optimum number and thickness of layers of the coating for optimizing the coating to reflect UV light at each of a plurality of wavelengths in direct proportion to the spectral power at each of the plurality of wavelengths;

operating the lamp to cause UV emission from an arc; and

reflecting the UV radiation back into the lamp.

12. (Original) The method of claim 11, wherein the coating reflects UV radiation such that at least 45% of the UV emitted by the arc in the wavelength range of 300-400 nm reaches a metal halide pool.

13. (Currently Amended) A method of improving the efficacy of a metal halide lamp comprising:

disposing a multi-layer coating on a surface of an arctube, the coating comprising layers of at least two materials of different refractive index, which in combination transmit visible radiation and reflect radiation in the UV region of the electromagnetic spectrum, the multi-layer coating being optimized by a computer program at an angle which is selected to take into account off-normal incidence of the radiation on the arctube during operation of the lamp;

operating the lamp to cause UV emission; and

reflecting the UV radiation back into the lamp.

14. (Currently Amended) The method of claim 13, wherein the method further includes:

determining a mean angle at which UV light within the arctube is incident on the arctube; and

selecting the angle at which the coating is optimized by the computer program, to be within about 10° of the mean angle.

15. (Original) The method of claim 14, wherein the angle at which the coating is optimized is within about 5° of the mean angle.

16. (Original) The lamp of claim 13, wherein the angle at which the coating is optimized is less than 35° from a direction normal to the arctube surface.

17. (Original) The method of claim 16, wherein angle at which the coating is optimized is from 10° to 35°.

18. (Original) The method of claim 17, wherein the arctube is vertically aligned and the angle at which the coating is optimized is from about 15° to about 30°.

19. (Currently Amended) The ~~lamp~~ method of claim 18, wherein the arctube is generally cylindrical in shape and the angle at which the coating is optimized is between about 20° and about 30°.

20. (Original) The method of claim 13, wherein the angle at which the coating is optimized is within about 10° of a mean angle at which UV light strikes the arctube wall.

21. (Original) The method of claim 20, wherein the angle at which the coating is optimized is within 5° of the mean angle.

22. (Original) The method of claim 13, wherein the step of disposing a multi-layer coating on a surface of an arctube includes:

utilizing a computer program for calculating a thickness of each of the layers and an optimum number of layers in the coating to optimize the coating at the angle.

23. (Original) The method of claim 13, wherein the step of optimization of the coating includes applying a greater weighting to providing high reflectivity in regions of the UV spectrum where spectral power is high.

24. (Original) The method of claim 13, wherein the coating is optimized

to reflect an average of at least 90% of the UV emission of the lamp between 300 and 391 nm.

25. (Original) The method of claim 24, wherein the coating is optimized to reflect an average of at least 95% of the UV emission of the lamp between 300 and 370 nm.

26. (Cancelled)

27. (Cancelled)

28. (New) A metal halide lamp formed by the method of claim 1 comprising:

an envelope;

a metal halide pool within the envelope for generating a discharge when the lamp is operated; and

a multi-layer coating on a surface of the envelope, the coating comprising layers of at least two materials of different refractive index, which in combination transmit visible radiation and reflect radiation in the UV region of the electromagnetic spectrum, the multi-layer coating reflecting at least 95% of UV radiation striking the coating.

29. (New) The lamp of claim 28, wherein the coating has been optimized for reflection of UV radiation which strikes the envelope at an angle which is within 10° of a mean angle of incidence of the UV radiation on the arctube.